

Neonatal Intestinal Obstruction

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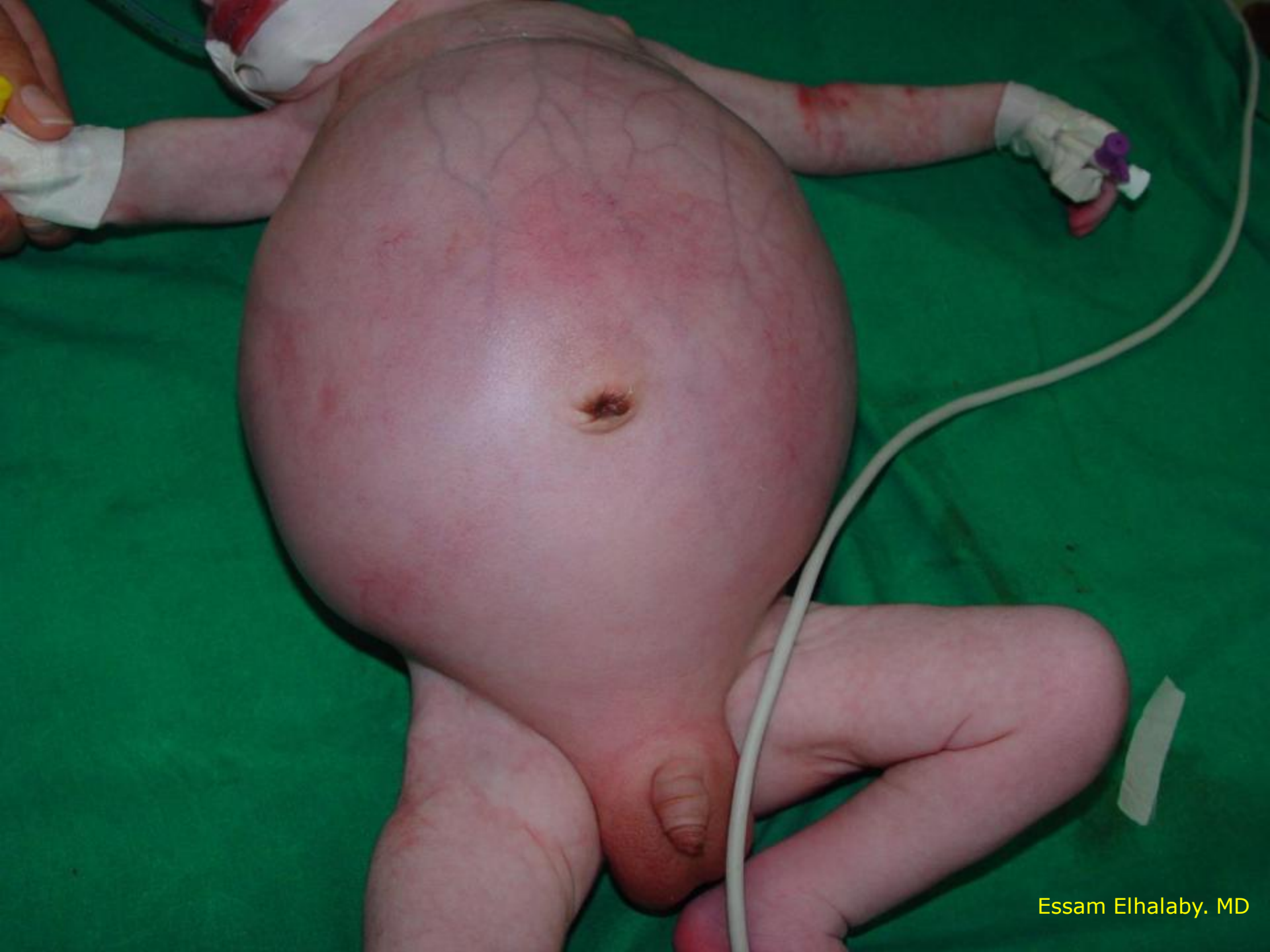


Objectives

By the end of this interactive lecture, the medical student should be able to:

- Identify a baby with a neonatal intestinal obstruction
- Define the most probably cause/s of obstruction
- Initiate a management plan





Initial Assessment

- ☐ Does the baby has a bowel obstruction ?
- ☐ Is the obstruction organic or functional ?
- ☐ What is the required diagnostic workup ?
- ☐ Management plan ?

Resuscitation should be carried out immediately

Clinical Presentation

- ❑ Polyhydramnios (>2000 ml)
- ❑ Bilious vomiting
- ❑ Abdominal distention
- ❑ Failure to pass normal amounts of meconium in the first 24 hours
- ❑ Bleeding per rectum



Maternal Polyhydramnios

- ❑ About 15-20 % of all causes of polyhydramnios
- ❑ lack of reabsorption of the amniotic fluid swallowed by the fetus
- ❑ Occurs in about one-half of all newborns with duodenal and proximal jejunal atresia
- ❑ Less frequent in babies born with ileal or colonic obstruction.

Bilious vomiting

- ❑ > 20 to 25 ml of clear gastric juice or any bile may signify the presence of alimentary tract obstruction
- ❑ occurs in 85% of babies with jejunal atresia and in a lesser number of infants with ileal atresia
- ❑ It may also be seen in instances of neonatal sepsis with adynamic ileus.

Non bilious vomiting

- ❑ Some cases of duodenal atresia
- ❑ Rare cases of pyloric or antral atresias
- ❑ Extreme rare cases of associated biliary atresia

Abdominal distension

- ❑ Caused by either free pneumoperitoneum, fluid or distended bowel.
- ❑ Obvious in about 80% of babies with obstruction distal to the jejunum.
- ❑ Usually develops 12 to 24 hours after birth
- ❑ Distension immediately at birth suggests the presence of giant cystic meconium peritonitis



Failure to pass meconium

- ❑ A cardinal sign in infants with low small bowel obstruction, HD, meconium plug syndrome, small left colon syndrome, NID, adynamic ileus, hypothyroidism, and maternal narcotic addiction
- ❑ Approximately 30% of newborns with duodenal atresia and about 20% of those with jejunoileal atresia evacuate once or twice normal meconium stool shortly after birth

Jaundice



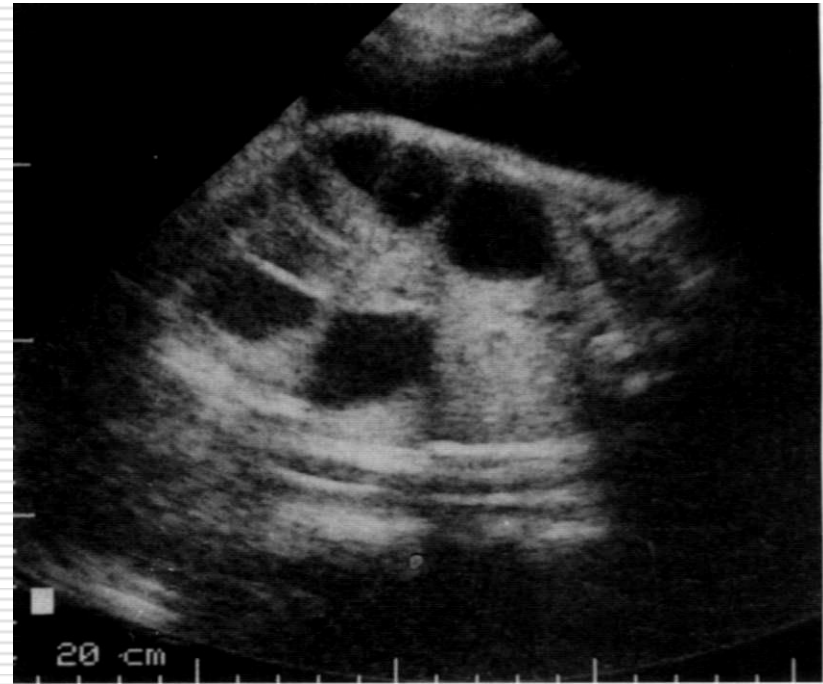
- ❑ occurs in about 40% of babies with proximal atresia and in about 20% of those with more distal obstruction
- ❑ Indirect hyperbilirubinemia caused by β -glucouronidase enzyme in the neonate's intestinal mucosa
- ❑ This enzyme unbinds conjugated bilirubin and enhances the enterohepatic recirculation of bilirubin

Diagnostic workup

- ☐ Prenatal ultrasound
- ☐ Plain radiographs
- ☐ Contrast enema
- ☐ Upper GI study
- ☐ Others

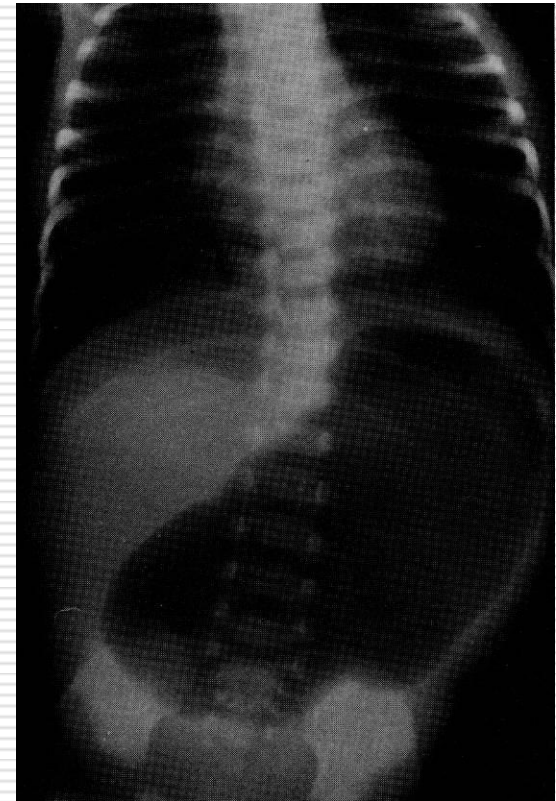
Prenatal Diagnosis (Ultrasonography)

- ❑ Polyhydramnios is a clear indication for obtaining maternal ultrasonography
- ❑ Prenatal US can identify intestinal obstruction associated with atresia, volvulus, meconium peritonitis.
- ❑ US provides also information about cardiac and CNS development



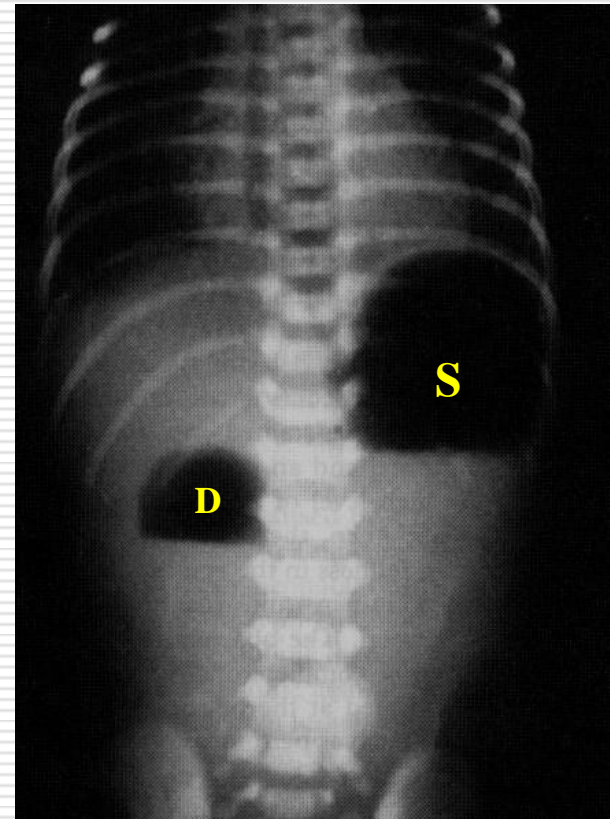
Plain abdominal X-ray

- **Single Bubble sign**
- Double bubble sign
- Triple bubble sign
- Multiple distended loops
- Multiple air- fluid levels
- Calcification
- Pneumatosis intestinalis
- Pneumoperitoneum



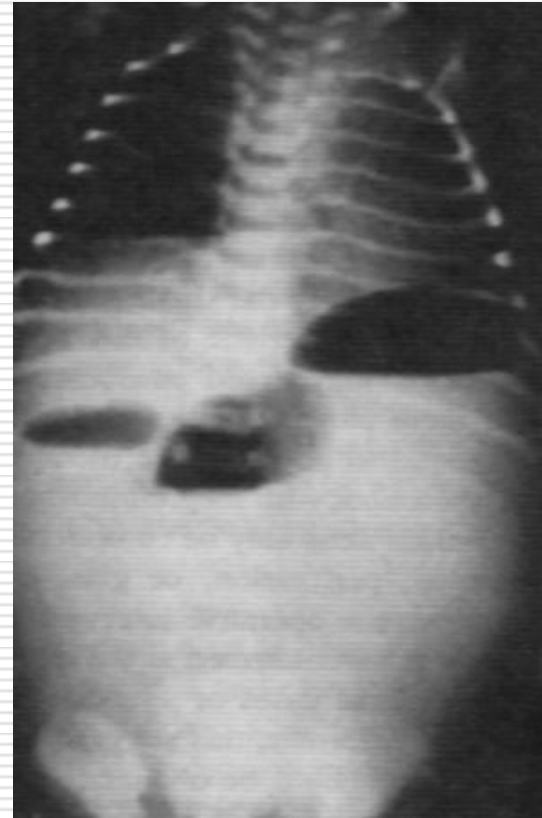
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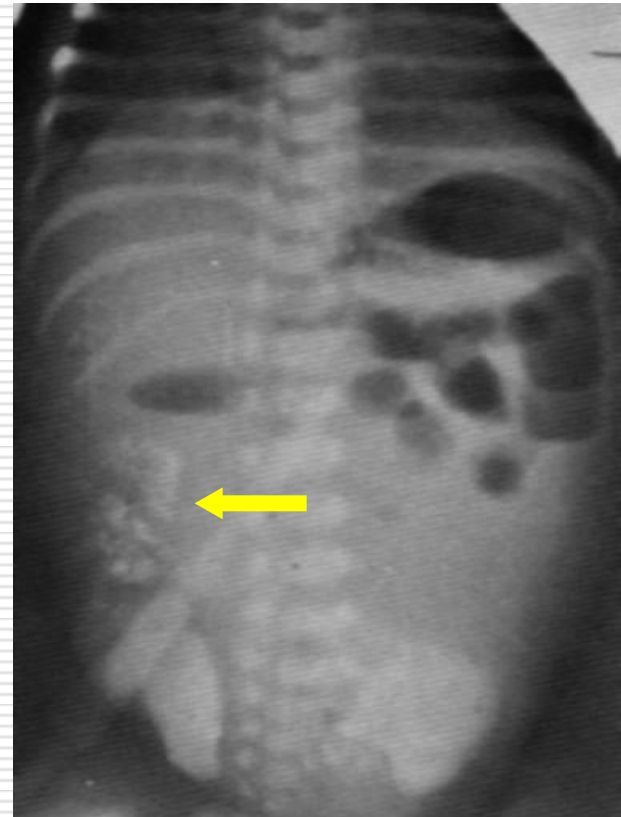
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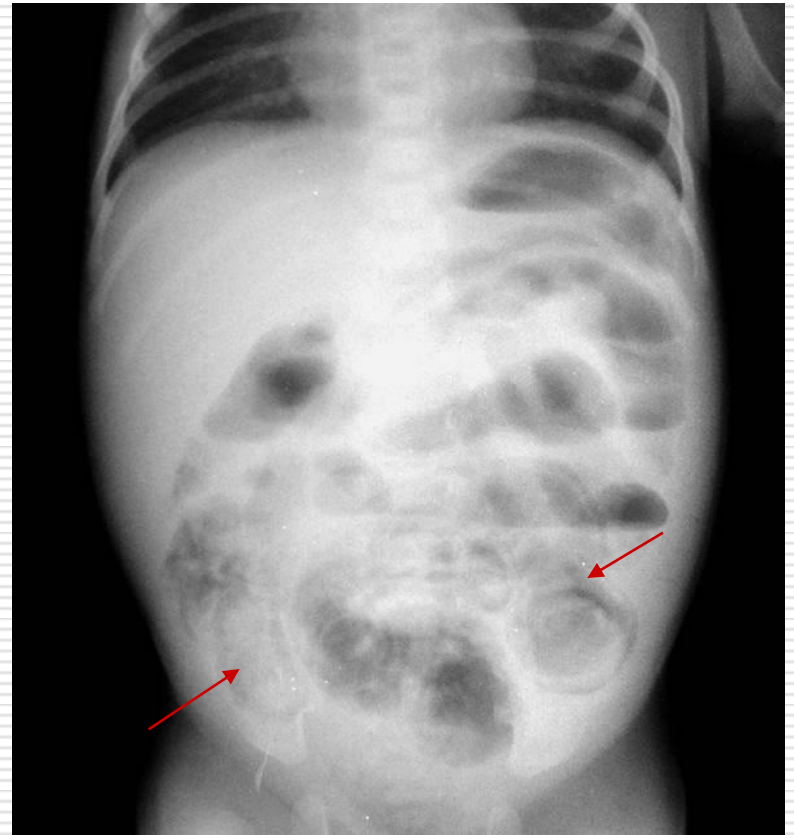
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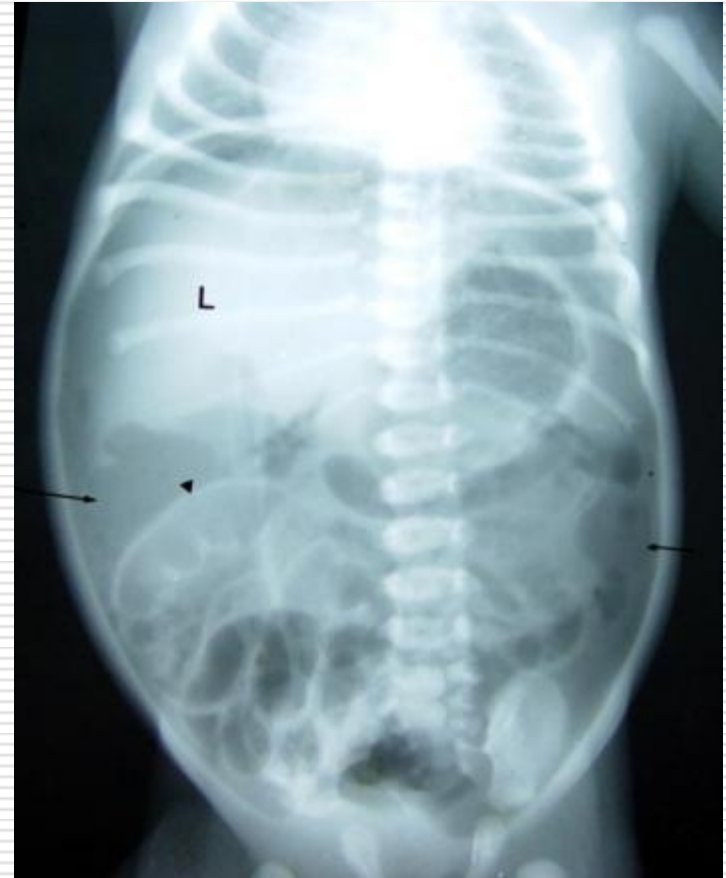
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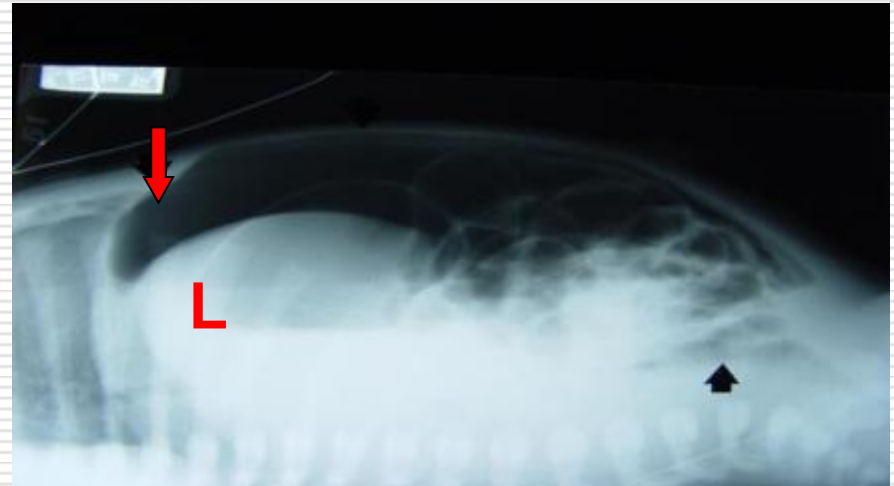
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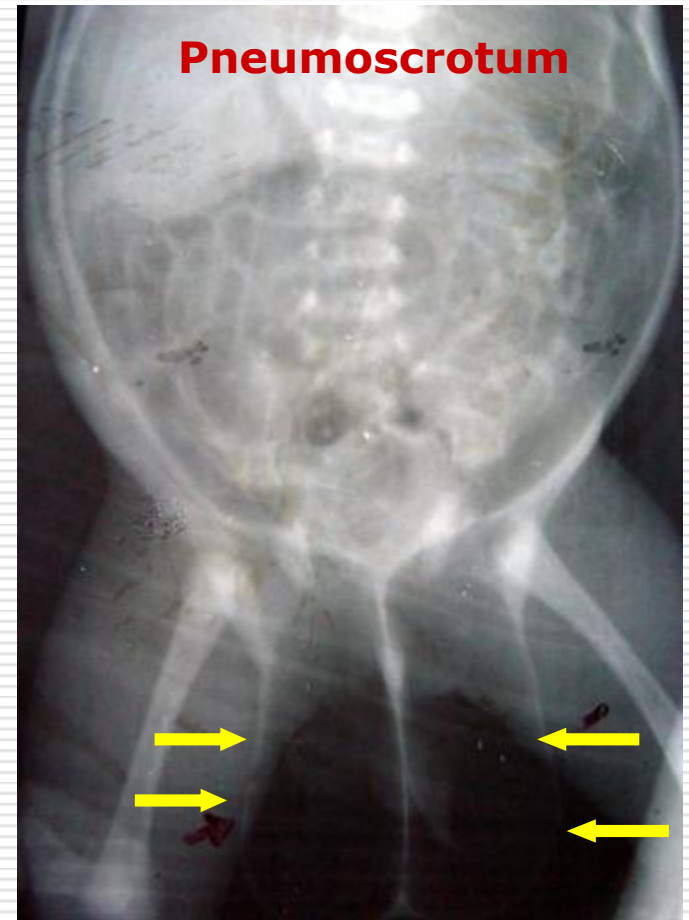
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Cross table lateral film

Plain abdominal X-ray

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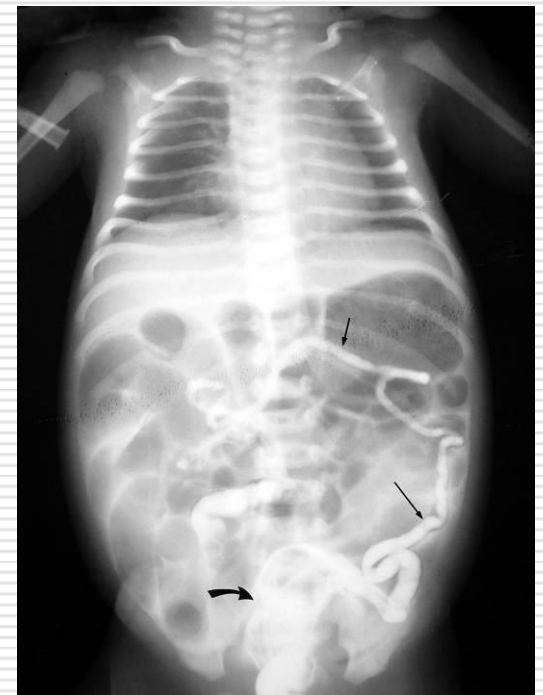
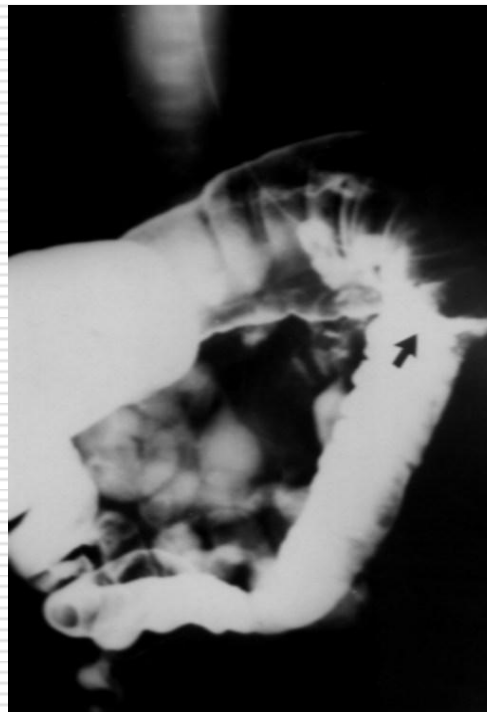
Contrast Enema

- ❑ Small intestinal Vs colonic distention
- ❑ Size of colon (used, unused “microcolon”)
- ❑ Position of the cecum
- ❑ Colonic atresia
- ❑ Transitional zone in HD



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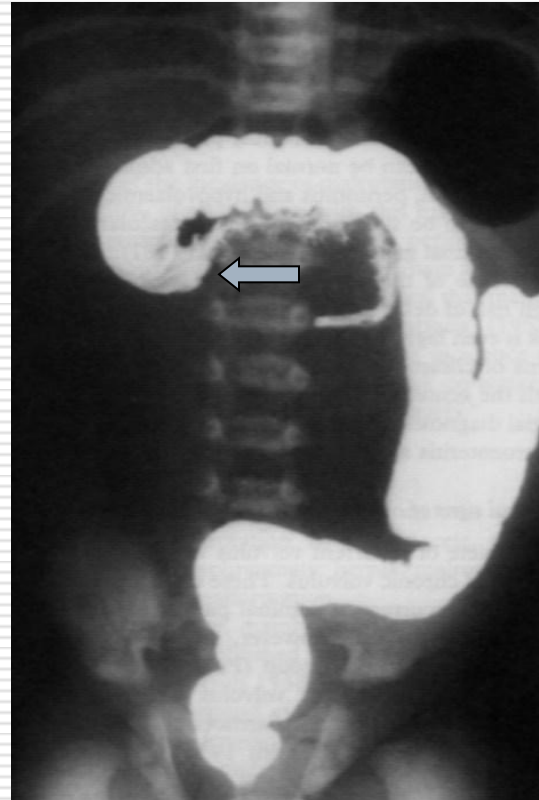
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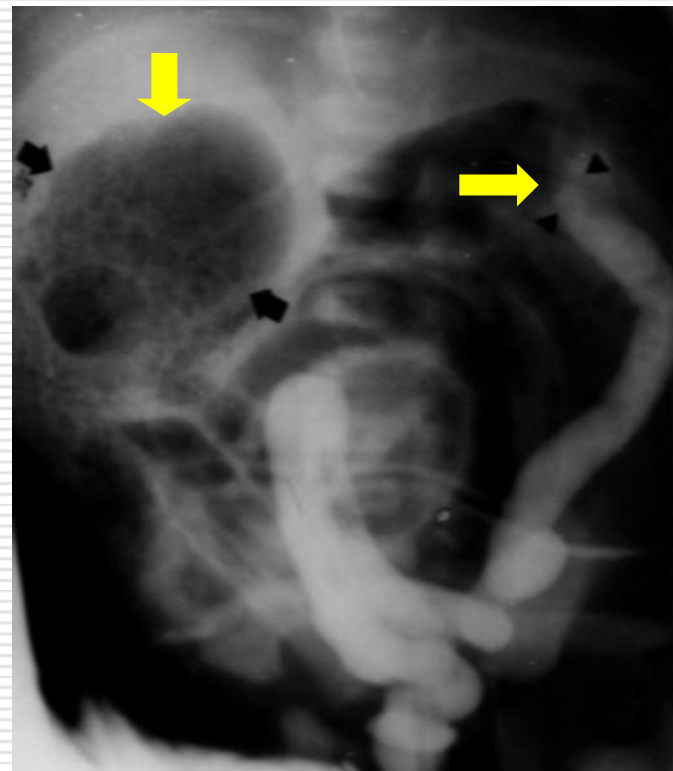
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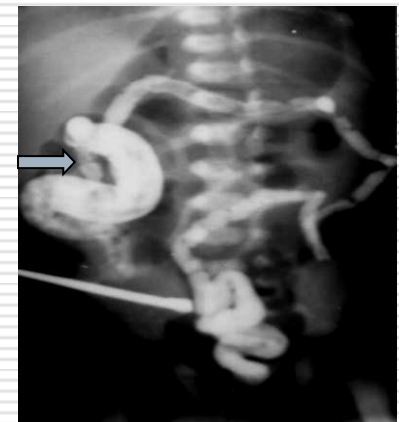
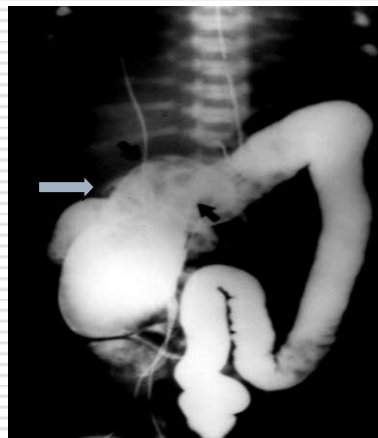
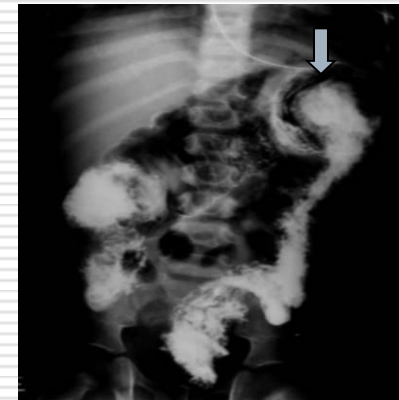
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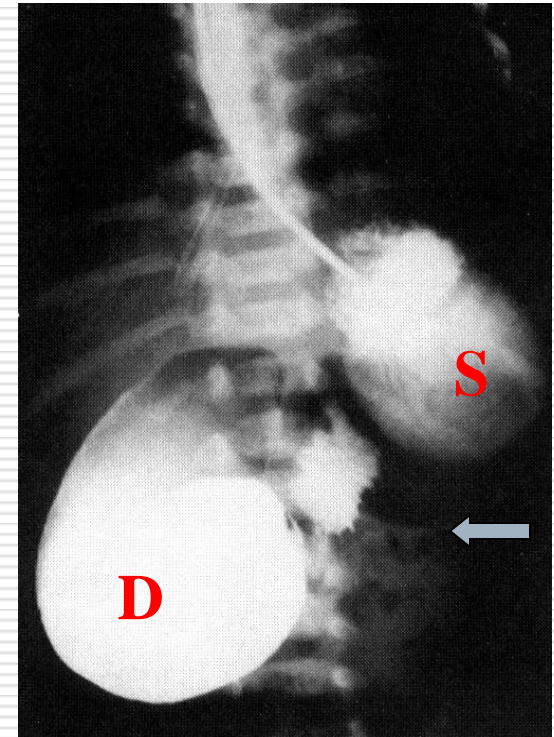
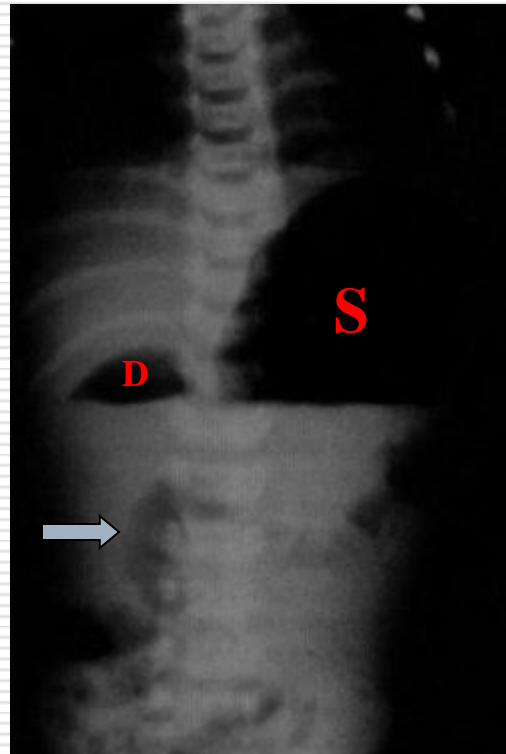
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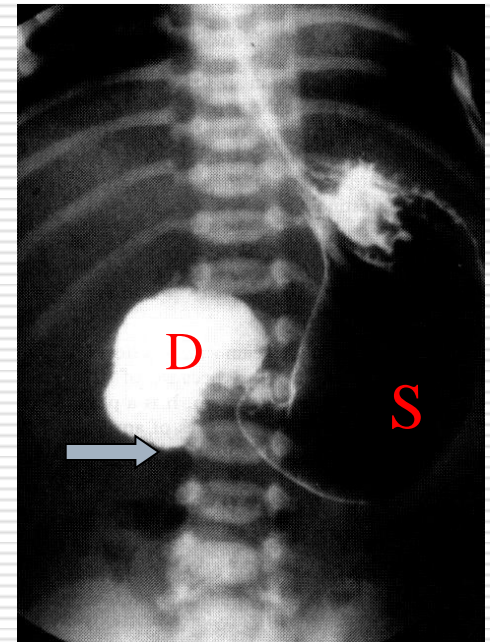
Upper GI Contrast

- ❑ incomplete duodenal or intestinal obstruction
- ❑ Delineating the presence of obstruction and detecting malrotation & volvulus
- ❑ Little indication in patients with radiographic evidence of complete upper IO



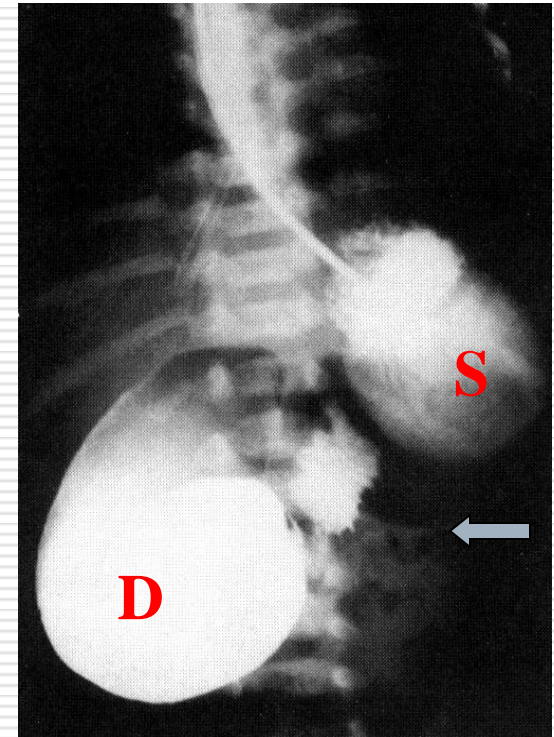
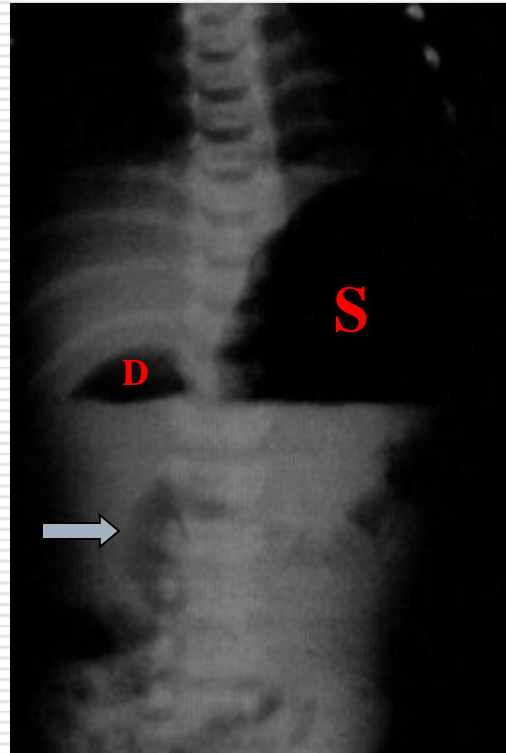
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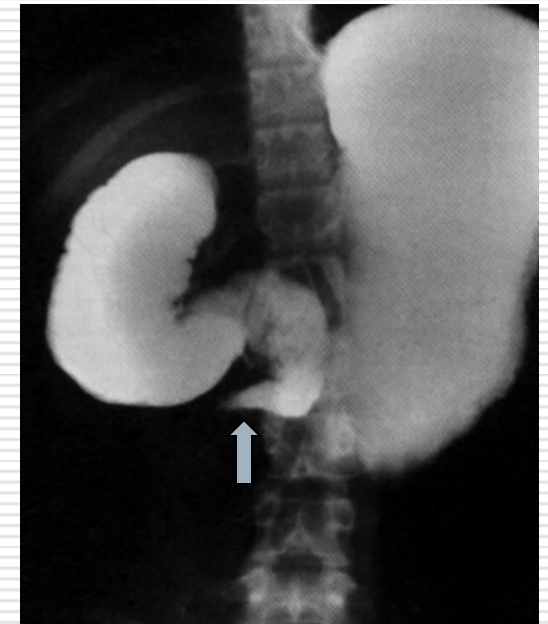
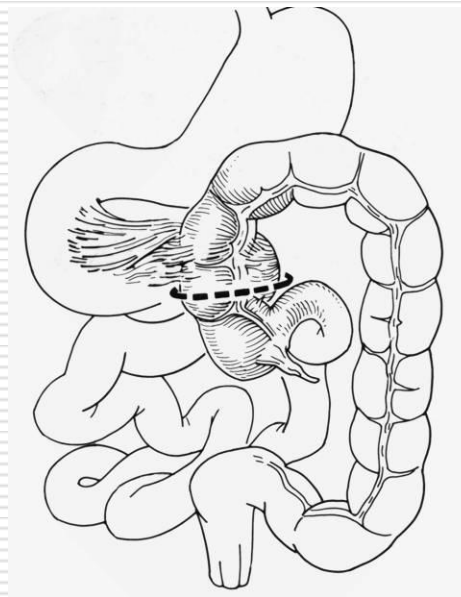
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Upper GI Contrast

- ❑ Visualization of the size and course of the duodenum
- ❑ lack of fixation at the ligament of Trietz
- ❑ A straight drop of the intestine on the right side of the abdomen
- ❑ **Obstruction of the duodenum with “tapering peak sign”**



Common Causes of Neonatal Intestinal Obstruction

- ☐ Intestinal Atresia
- ☐ Malrotation
- ☐ Meconium Ileus
- ☐ Meconium Plug Syndrome
- ☐ Necrotizing Enterocolitis
- ☐ Hirschsprung's Disease
- ☐ Anorectal Malformations
- ☐ Incarcerated Inguinal Hernia

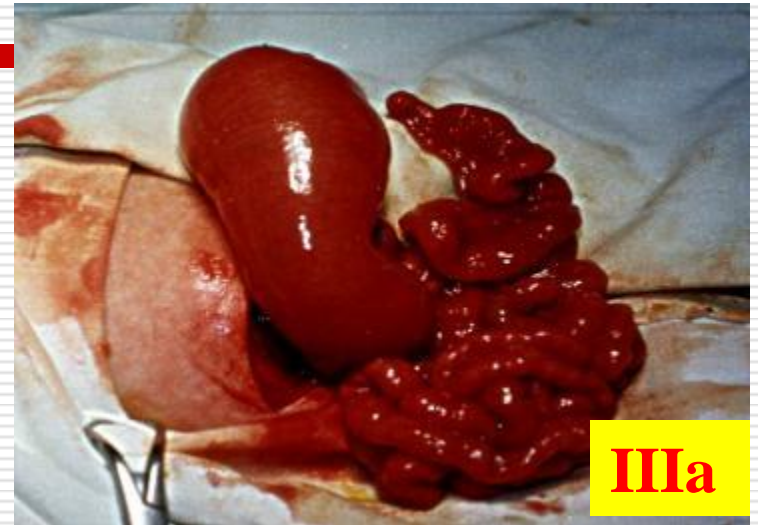
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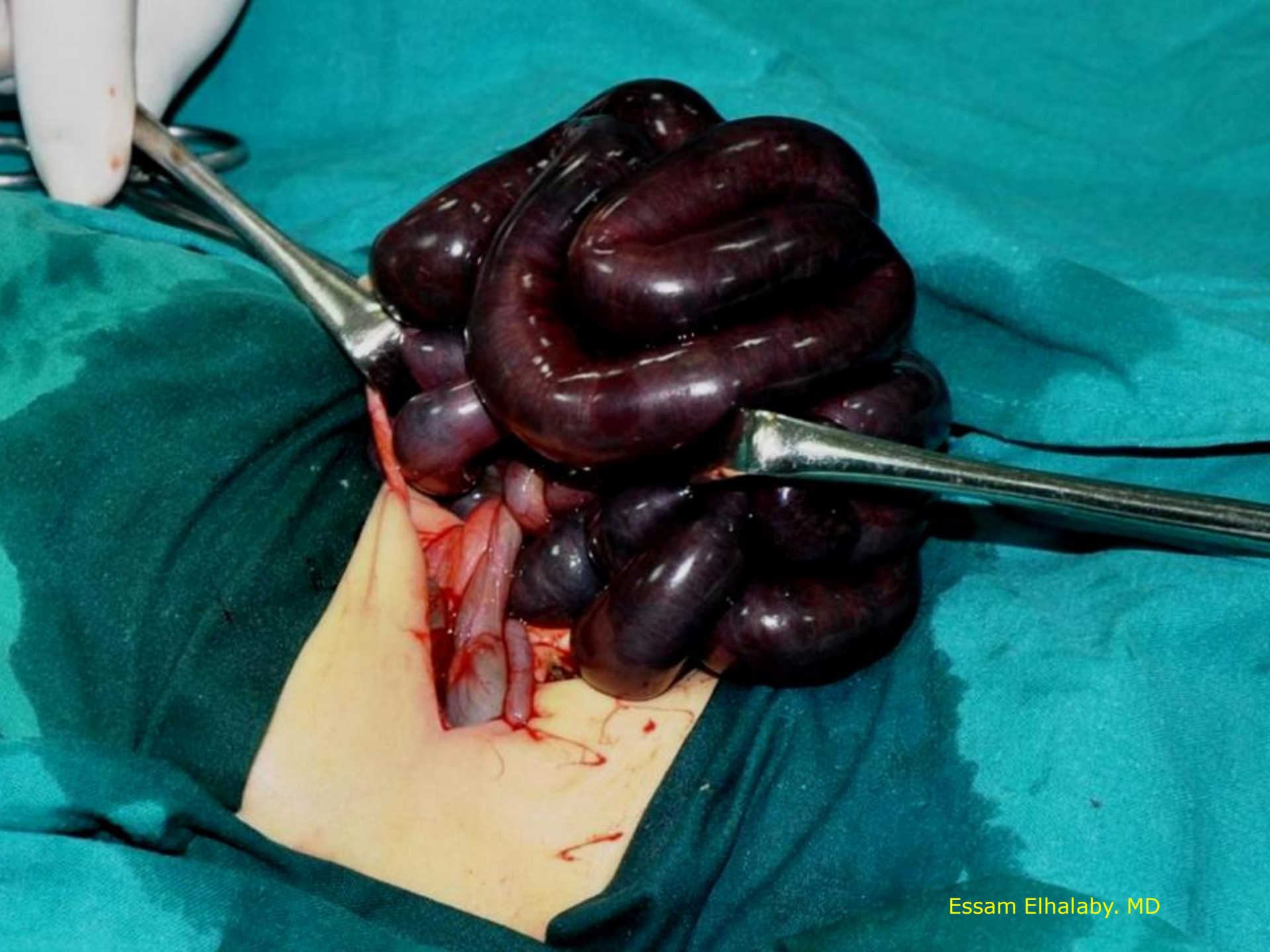
Classification of Intestinal Atresia



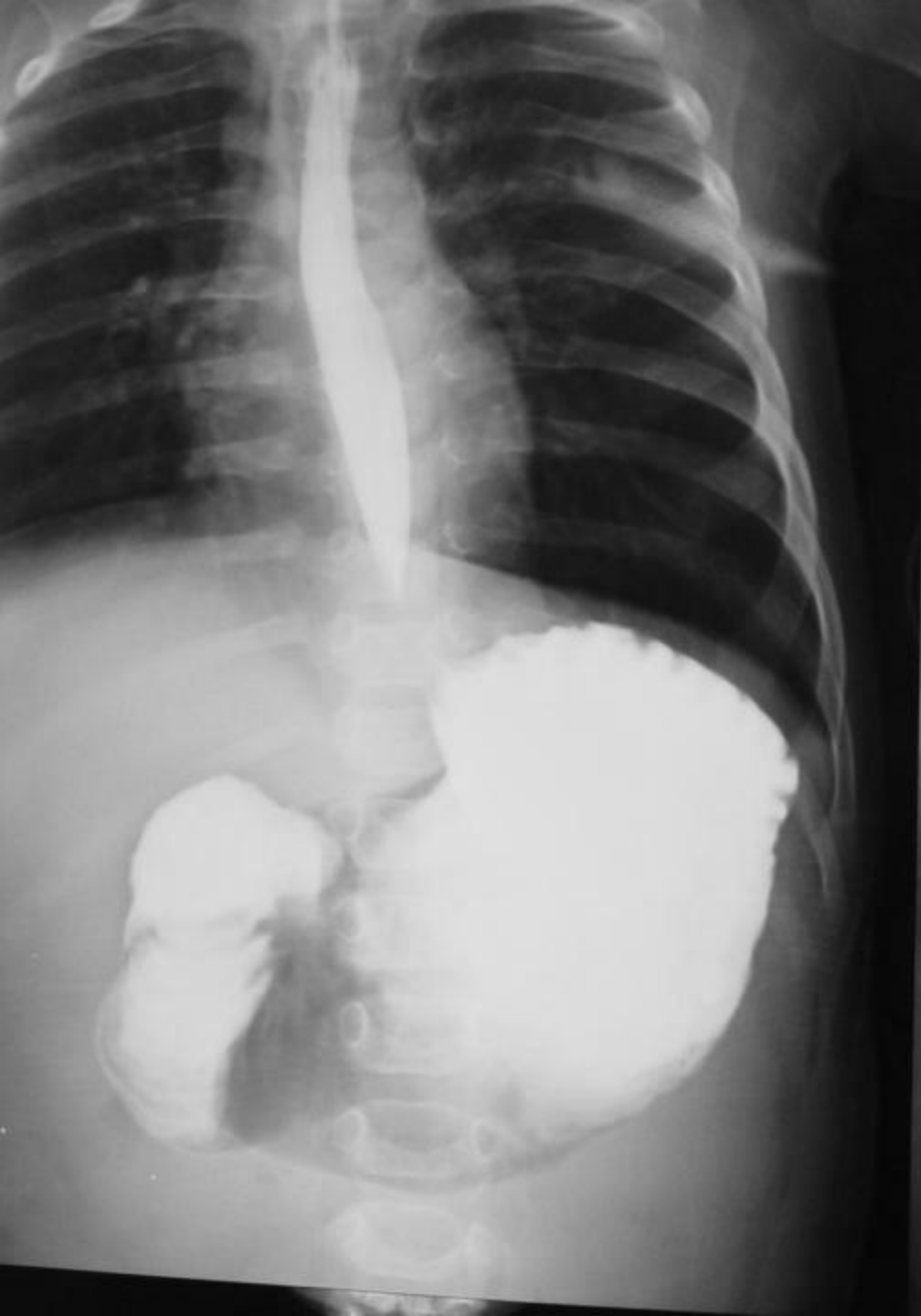
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Essam Elhalaby. MD

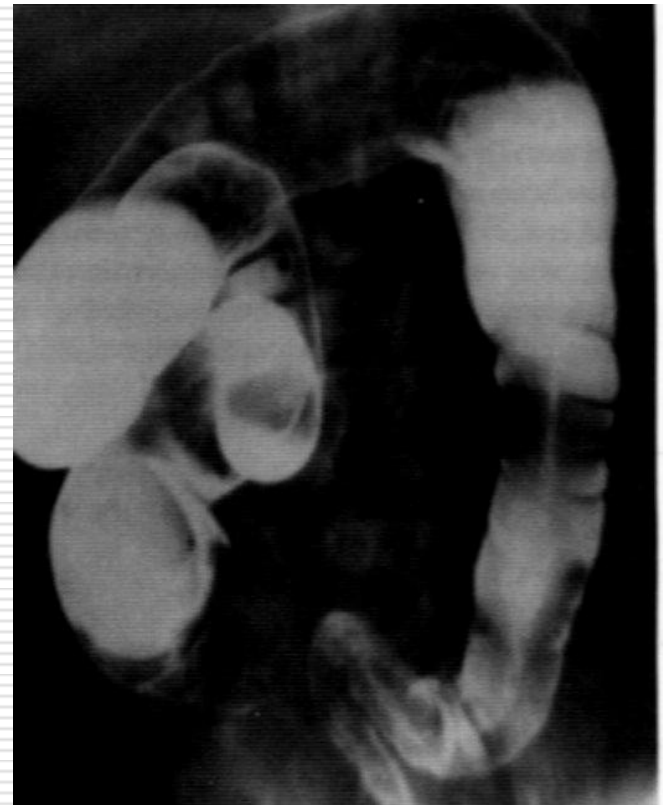
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Imperforate Anus





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- ☐ **Incarcerated Inguinal Hernia**



XI. Other causes of functional NIO

- ☐ Drugs used by the mother such as magnesium sulfate and ganglionic blocking agents.
 - ☐ Congenital hypothyroidism
 - ☐ Hypercalcemia
 - ☐ Hypokalemia
 - ☐ Sepsis
 - ☐ congestive heart failure
-

Recommendation to improve outcome

- ▣ Prenatal diagnosis
 - ▣ Regionalization of neonatal intensive care units
 - ▣ Improving management of associated conditions,
 - ▣ Modern anesthetic care
 - ▣ Use of advanced technology in cardiopulmonary monitoring,
 - ▣ Use of innovative and proven surgical techniques
 - ▣ Availability of long-term total parenteral nutrition
-





Thank You
Essam Elhalaby, MD